

Product name

Polyphen® rigid insulation foam

Product type: Polyphen® FM40, FR50 and FM70

Comparative test

<https://www.youtube.com/watch?v=ywTMBCzG8SA>

Polyphen® is an engineered mix of EPS- giving compression and insulation- and a phenolic coating system- giving it very good fire properties.

Polyphen® is produced in a one-step low cost, low investment and low emission batch process using unexpanded EPS beads and a special phenolic recipe. With a suitable crusher Polyphen® foam is 100% recyclable. **Refer to a separate info sheet.**

Abrasive wire cutting is needed to shape blocks and cut sheets. Note: a hot wire is incapable of cutting Polyphen® foam. Product density can be tuned to the application. Smoke emission of Polyphen® is very low and superior to PIR/PUR. Polyphen® can achieve class 1 in the E84 tunnel test, whereas PIR/PU cannot, due to the large amount of toxic smoke driven off during testing. Unlike EPS, conditioning of material is not needed to achieve fire safety properties. FM40 exhibits good non-flame spread properties.



FR50 shows excellent flame stoppage. capability

Fire resistance furnace test Polyphen® panels achieved a **90-minute fire** rating when tested to ISO 476- 24, which is equivalent to ISO 834

Polyphen® panels achieve **Factory Mutual** (www.fmglobal.com) FM4880 & 4882 approval to unlimited height.

Worldwide applications

Invented and developed in Australia; Polyphen® has multiple licensees.

Application

Insulation of cavity walls, walls, roofs, and floors in domestic and other building applications, sandwich panels, ETICS, Fire belts (Brandriegel) and flat roof PV systems.

Note: Polyphen® insulation must be used part of a construction system and should not be used as unprotected foam. Avoid direct exposure to moisture. Prevent the lightweight foam from being blown away, and secure packaging against wind loads.

Distribution

This document contains valuable information to enable appropriate use of this product. The information in this document should be brought to the attention of the person in your organization responsible for design and engineering.

Disclaimer

No rights can be granted from this info sheet, a prospective user has to ascertain the suitability for the intended application.

General information

Polyphen® is a registered trademark of **International Branding Pty Ltd.** having its registered office at Gisborne, Victoria, Australia.

Polyphen® designation	FM40	FR50	FM70X	EPS 20
Density kg/m3	40-46	46-55	73-80	20-23
lambda (mW/mK)	0,034	0,035	0,036	0,036
compressive strength. kPa	113	136	220	100
bending strength, kPa	260	245	tbd	200
Euro Class E	pass	pass	pass	pass
Higher Euro Class	D-s1,d0	C-s1,d0	C-s1,d0	not possible
In a system	B- s1,d0	B- s1,d0	B- s1,d0	B- s1,d0

ADDITIONAL DATA OBTAINED

Density	45 – 50 kg/m ³
Compressive strength (AS2498.3)	126 kPa
Tensile strength (ASTMD1623)	237 kPa
Shear strength (ASTM C273)	104 kPa
Cross-breaking strength (AS2498.4)	248 kPa
Thermal conductivity:AS 2464.6, at 10 degrees Celsius)	0,035 W/mK
Thermal conductivity:AS 2464.6, at 25 degrees Celsius)	0,037 W/mK
Thermal resistance: AS 2404.5, 50mm, 25 degrees Celsius)	1,35 m ² K/W
Water vapour transmission: 12 g/m ² /24 hours ASTME96, 23 degrees 38 microgram.m/Nh Celsius, 53% RH	12 g/m ² /24 hours
Dimensional stability: (AS 2498.6) (Linear change, 20 hours) a. 70 degrees Celsius, 95% RH b. - 10 degrees Celsius	less than 0.5% less than 0.5%
Fire Resistance/Rating Flame Propagation (AS 2122.1) Median % volume retained 96.4% Eighth value % volume retained 96.2% Median Flame Duration (seconds) 0 Eighth Value Flame Duration (seconds) 0	96.4% 96.2% 0 0
Fire rating to AS1530.4 (BS476 Part24, ISO834, ASTM E119) Fire Rating has been achieved for 200mm thick Polyphen® sandwich panel with 0.6mm steel both sides (tested by Warrington Fire Research)	2 hours
Flame Propagation & Smoke release AS/NZS 1530. Pt 3 Spread of Flame Index SFI 0 Smoke Developed Index 3	SFI 0 Index 3
Surface Burning Characteristics ASTM E84-05 Flame Spread Smoke Developed	Index 20 Index 5
ISO 9705 Room Corner Test Group 1 (Building Code of Australia)	Group 1 (no flashover).
Factory Mutual Room Corner Test FM Approvals Standard 4880 (1994) Class 1 Fire Rated to Unlimited Height (250 mm thick sandwich panels, 0.6 mm steel both sides with tongue-and-groove joints).	
Biological Resistance Mould: Does not promote mould growth. Vermin: Offers no food value to insects or rodents.	